

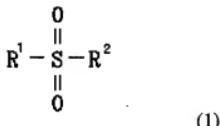
Appln No. 10/656,086  
Amdt date November 2, 2007  
Reply to Office action of August 2, 2007

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) An electrolyte for a lithium battery, comprising a non-aqueous organic solvent, a lithium salt, and an additive comprising a) a sulfone-based compound represented by Formula (1):



where R<sup>1</sup> and R<sup>2</sup> are independently selected from the group consisting of primary alkyl groups, secondary alkyl groups, tertiary alkyl groups, alkenyl groups, and aryl groups; and b) a C<sub>3</sub> to C<sub>30</sub> organic peroxide or azo-based compound.

2. (Canceled).
3. (Canceled).
4. (Canceled).
5. (Canceled).
6. (Original) The electrolyte for a lithium battery according to claim 1, wherein the organic peroxide or azo-based compound is present in an amount of 0.001 to 10 wt% based on the total amount of electrolyte.
7. (Original) The electrolyte for a lithium battery according to claim 1, comprising an organic peroxide selected from the group consisting of isobutyl peroxide, lauroyl peroxide,

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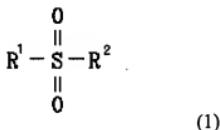
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benzoyl peroxide, m-toluoyl peroxide, t-butylperoxy-2-ethyl hexanoate, t-butyl peroxy bobarate, t-butyloxynonodecanate, diisopropyl peroxy dicarbonate, diethoxy peroxy dicarbonate, bis-(4-t-butylcyclohexyl)peroxy dicarbonate, dimethoxy isopropyl peroxy dicarbonate, dicyclohexylperoxy dicarbonate, 3,3,5-trimethylhexanoyl peroxide, and dialkyl oxide.

8. (Previously Presented) The electrolyte for a lithium battery according to claim 1, comprising 2,2'-azobisisobutyronitrile.

9. (Previously Presented) An electrolyte for a lithium battery comprising a non-aqueous organic solvent, a lithium salt, and an additive comprising a) a sulfone-based compound represented by Formula (1):



where R<sup>1</sup> and R<sup>2</sup> are independently selected from the group consisting of primary alkyl groups, secondary alkyl groups, tertiary alkyl groups, alkenyl groups, and aryl groups; and b) a C<sub>3</sub> to C<sub>30</sub> organic peroxide or azo-based compound wherein the electrolyte includes a poly(ester)(meth)acrylate or a polymer thereof and the poly(ester)(meth)acrylate is a polymer derived from a (polyester)polyol with at least three hydroxyl (-OH) groups, where a portion or all of the hydroxyl groups are substituted with a (meth)acrylic ester and any remaining hydroxyl groups that are not substituted with the (meth)acrylic ester are substituted with a group having no radical reactivity.

10. (Original) The electrolyte for a lithium battery according to claim 1, wherein the lithium salt is at least one selected from the group consisting of LiPF<sub>6</sub>, LiBF<sub>4</sub>, LiSbF<sub>6</sub>, LiAsF<sub>6</sub>, LiClO<sub>4</sub>, LiCF<sub>3</sub>SO<sub>3</sub>, Li(CF<sub>3</sub>SO<sub>2</sub>)<sub>2</sub>N, LiC<sub>4</sub>F<sub>9</sub>SO<sub>3</sub>, LiSbF<sub>6</sub>, LiAlO<sub>4</sub>, LiAlCl<sub>4</sub>, LiN(C<sub>x</sub>F<sub>2x+1</sub>SO<sub>2</sub>)(C<sub>y</sub>F<sub>2y+1</sub>SO<sub>2</sub>), wherein x and y are natural numbers, LiCl, and LiI.

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11. (Original) The electrolyte for a lithium battery according to claim 10, wherein the lithium salt is present in a concentration ranging from 0.6 to 2.0 M,

12. (Original) The electrolyte for a lithium battery according to claim 1, wherein the non-aqueous organic solvent is at least one selected from the group consisting of carbonates, esters, ethers, and ketones.

13. (Original) The electrolyte for a lithium battery according to claim 12, wherein the non-aqueous organic solvent comprises at least one carbonate selected from the group consisting of dimethyl carbonate (DMC), diethyl carbonate (DEC), dipropyl carbonate (DPC), methylpropyl carbonate (MPC), ethylpropyl carbonate (EPC), methylethyl carbonate (MEC), ethylene carbonate (EC), propylene carbonate (PC), and butylene carbonate (BC).

14. (Withdrawn) The electrolyte for a lithium battery according to claim 1, wherein the electrolyte comprises a mixed solvent of a cyclic carbonate and a chain carbonate.

15. (Withdrawn) The electrolyte for a lithium battery according to claim 1, wherein the electrolyte comprises a mixed solvent of a carbonate solvent and an aromatic hydrocarbon solvent.

16. (Withdrawn) The electrolyte for a lithium battery according to claim 15, wherein the aromatic hydrocarbon solvent is a compound of Formula (6):



wherein  $R^3$  is a halogen or a  $C_1$  to  $C_{10}$  alkyl, and  $q$  is an integer of 1 to 6.

17. (Withdrawn) The electrolyte for a lithium battery according to claim 16, wherein the aromatic hydrocarbon solvent is at least one selected from the group consisting of benzene, chlorobenzene, nitrobenzene, fluorobenzene, toluene, trifluorotoluene, and xylene.

18. (Withdrawn) The electrolyte for a lithium battery according to claim 15, wherein the carbonate solvent and the aromatic hydrocarbon solvent are mixed in a volume ratio of 1:1 to 30:1.

19. (Withdrawn) The electrolyte for a lithium battery according to claim 15, wherein the electrolyte comprises a mixed solvent of an ethylene carbonate and a carbonate having a lower boiling point.

20-30. (Canceled).

31. (Original) A lithium battery comprising:

a positive electrode including a material that is capable of reversible intercalation/deintercalation of lithium ions, or a material that is capable of reversibly forming a lithium-containing compound as a positive active material;

a negative electrode including a lithium metal, a lithium-containing alloy, or a material that is capable of reversible intercalation/deintercalation of lithium ions; and

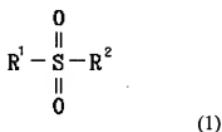
an electrolyte of claim 1.

32. (Previously Presented) A lithium battery comprising:

a positive electrode comprising a lithium-nickel-based or a lithium-nickel-manganese-based oxide;

a negative electrode including a lithium metal, a lithium-containing alloy, or a material that is capable of reversible intercalation/deintercalation of lithium ions; and

an electrolyte comprising a non-aqueous organic solvent, a lithium salt, and an additive comprising a) a sulfone-based compound represented by Formula (1):



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where R<sup>1</sup> and R<sup>2</sup> are independently selected from the group consisting of primary alkyl groups, secondary alkyl groups, tertiary alkyl groups, alkenyl groups, and aryl groups; and b) a C<sub>3</sub> to C<sub>30</sub> organic peroxide or azo-based compound.

33. (Original) The lithium battery according to claim 31, wherein the negative electrode includes a carbonaceous material having a d002 interplanar distance of about 3.35 to about 3.38.

34. (Original) The lithium battery according to claim 31, wherein the negative electrode includes a carbonaceous material having an Lc (crystallite size) measured by X-ray diffraction of more than 20nm.